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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,368	12/09/2003	Lawrence E. Fink	7784-000670	4398
27572	7590	01/25/2006	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C.			KIM, TAE JUN	
P.O. BOX 828			ART UNIT	
BLOOMFIELD HILLS, MI 48303			PAPER NUMBER	
			3746	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/731,368	FINK, LAWRENCE E.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-12,15-23 and 25-31 is/are pending in the application.
- 4a) Of the above claim(s) 4,5,30 and 31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 6-12, 15-23, 25-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I: Figure(s) 1-3

Species II: Figure(s) 4-5

Species III: Figure(s) 6

Species IV: a liner in the bendable duct (non-illustrated)

Species V: segmented petals slidably movable within the convoluted bendable duct (non-illustrated).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. Newly submitted claims 30, 31 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: they present additional species that are patentably distinct from previously elected species I, which was elected without traverse.

Since applicant has received an action on the merits for the originally presented invention of Species I, as illustrated, this invention has been constructively elected by

original presentation for prosecution on the merits. Accordingly, claims 30, 31 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Drawings

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features of claim 30, 31 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 6, 7, 10-12, 15, 16, 19-23, 26, 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Ritchey et al (3,140,584). Ritchey et al teach jet engine for a mobile platform, the engine comprising: a nozzle rim (end of 36); a bendable duct 38 defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim; and a gimbal joint 34 pivotably coupling the nozzle rim to supporting structure to allow pivoting of the nozzle rim about a first axis and a second axis for changing a vector at which the exhaust flow is discharged from the nozzle rim; the gimbal joint comprises a gimbal ring pivotably coupled to supporting structure to allow pivoting of the gimbal ring 34 relative to the supporting structure, and pivotably coupled to the nozzle rim (end of 36) to allow pivoting of the nozzle rim relative to the gimbal ring; the first axis is generally perpendicular to the second axis; an actuation system for controllably pivoting the nozzle rim; the bendable duct 38 is convoluted; at least one gimbal ring 34 pivotably coupled to supporting structure and to the nozzle rim

to allow pivoting of the nozzle rim about a first axis and a second axis for changing a vector at which the exhaust flow is discharged from the nozzle rim; the method comprising: using the jet engine to generate an exhaust flow; communicating the exhaust flow through a bendable duct to a nozzle rim pivotably coupled to supporting structure with a two-axis gimbal joint 34; discharging the exhaust flow from the nozzle rim; and controllably pivoting the nozzle rim to change a vector at which the exhaust flow is discharged from the nozzle rim; the method comprising: pivotably coupling a nozzle rim to supporting structure with a two-axis gimbal joint; and coupling a bendable duct 38 to the nozzle rim and the engine defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim.

6. Claims 1, 2, 6, 7, 10-12, 15, 16, 19-23, 26-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Zeisloft (3,090,198). Zeisloft teaches a jet engine for a mobile platform, the engine comprising: a nozzle rim (end of 10); a bendable duct 88 defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim; and a gimbal joint 18 pivotably coupling the nozzle rim to supporting structure to allow pivoting of the nozzle rim about a first axis and a second axis for changing a vector at which the exhaust flow is discharged from the nozzle rim; the gimbal joint comprises a gimbal ring pivotably coupled to supporting structure to allow pivoting of the gimbal ring relative to the supporting structure, and pivotably coupled to the nozzle rim to allow pivoting of the nozzle rim relative to the gimbal ring; the first axis is generally perpendicular to the second axis; an actuation system 102 for controllably

pivoting the nozzle rim; the bendable duct is convoluted 88; at least one gimbal ring 18 pivotably coupled to supporting structure and to the nozzle rim to allow pivoting of the nozzle rim about a first axis and a second axis for changing a vector at which the exhaust flow is discharged from the nozzle rim; the method comprising: using the jet engine to generate an exhaust flow; communicating the exhaust flow through a bendable duct to a nozzle rim pivotably coupled to supporting structure 24 with a two-axis gimbal joint 18; discharging the exhaust flow from the nozzle rim; and controllably pivoting the nozzle rim to change a vector at which the exhaust flow is discharged from the nozzle rim; the method comprising: pivotably coupling a nozzle rim to supporting structure with a two-axis gimbal joint 18; and coupling a bendable duct 88 to the nozzle rim and the engine defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim. The bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit (note the temperature is in the range of 6000-7000 degrees, see col. 3, lines 15+) and is sufficiently inherently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2, 6, 7, 10, 11, 12, 15, 16, 19-23, 26-29 are rejected under 35 U.S.C.

103(a) as being unpatentable over Crabill et al (3,270,505) in view of Martin (4,350,297).

Crabill et al teach a jet engine for a mobile platform, the engine comprising: a nozzle rim 30; a bendable duct 54 defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim; and supporting structure 44 to allow pivoting of the nozzle rim about a first axis and a second axis for changing a vector at which the exhaust flow is discharged from the nozzle rim; the bendable duct 54 is convoluted. The bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit (e.g. temperatures of 2000 degrees Fahrenheit, see col. 4, lines 30+) and is inherently sufficiently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending. Alternately, it would have been obvious to make the duct sufficiently flexible to allow repeated bending without significant loss of strength due to fatigue from repeated bending in order to prevent premature failure. Crabill et al do not teach the supporting structure 44 has a gimbal. Martin teaches it is old and well known in the art to employ a gimbal 30 connected to the supporting structure 33 to control the positioning of the nozzle. It would have been obvious to one of ordinary skill in the art to employ a gimbal ring to control the positioning of the nozzle to allow for precise alignment (col. 1, lines

29-30). It would have been obvious to one of ordinary skill in the art to employ a gimbal ring, as taught by Martin, in order to allow for precise alignment of the nozzle.

9. Claims 1, 2, 6-12, 15-23, 25-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zeisloft (3,090,198) in view of Voigt (4,892,253). Zeisloft teaches various aspects of the claimed invention but do not teach the actuation system employs yokes with arms and gear teeth. The bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit (note the temperature is in the range of 6000-7000 degrees, see col. 3, lines 15+) and is sufficiently inherently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending. Alternately, it would have been obvious to make the duct sufficiently flexible to allow repeated bending without significant loss of strength due to fatigue from repeated bending in order to prevent premature failure. Voigt teaches that (Fig. 1) that is old and well known in the art to employ an actuation system with yokes 22 and arms 22 and gear teeth for steering the nozzle, with advantages including being shorter, lighter, easier to fabricate and better adapted for greater maneuverability (col. 1, lines 67-col. 2, line 3). It would have been obvious to one of ordinary skill in the art to employ the actuation system of Voigt, in order to take advantage of the actuation system being shorter, lighter, easier to fabricate and better adapted for greater maneuverability.

10. Claims 28, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ritchey et al (3,140,584), as applied above, and further in view of either Crabill et al or

Zeisloft. Ritchey et al do not teach the temperature capacity of the bendable duct.

bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit (note the temperature is in the range of 6000-7000 degrees, see col. 3, lines 15+) and is sufficiently inherently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending. Crabill et al teach the bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit (e.g. temperatures of 2000 degrees Fahrenheit, see col. 4, lines 30+) and is inherently sufficiently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending. It would have been obvious to one of ordinary skill in the art the bendable duct is made of a material having good strength properties at a temperature of about 1800 degree Fahrenheit and sufficiently flexible to allow the duct to accept a degree of strain repeatedly without significant loss of strength due to fatigue from repeated bending. Alternately, it would have been obvious to make the duct sufficiently flexible to allow repeated bending without significant loss of strength due to fatigue from repeated bending in order to prevent premature failure

Response to Arguments

11. Applicant's arguments filed 12/05/2005 have been fully considered but they are not persuasive. Applicant's arguments hinge on the new limitations added by the amendment to the independent claims that the "bendable duct defining a conduit in which exhaust flow generated by the engine is received and delivered to the nozzle rim"

requires that there be **direct** incidence of the combustion gas to the flexible tube or bellows. However, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **direct** incidence of the combustion gas to the flexible tube or bellows) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Moreover, applicant's argument that there must be direct incidence of the combustion gas to the flexible tube or bellows is refuted by his own specification and amendment to the claims to incorporate claims 30, 31. Applicant specifically references paragraph 0029 of the specification which is reproduced below:

“In those embodiments in which the duct is convoluted, a liner can be positioned within the duct so as to define a generally smooth inner surface along the length of the substantially entirety of the duct, or at least a portion of the duct length. Accordingly, exhaust flow contacts the smooth liner surface instead of the convoluted duct surface. This, in turn, will eliminate, or at least reduce, the potential adverse influences and effects that the convoluted surface might otherwise have on the exhaust flow, such as increased friction, increased acoustic noise, and/or

introduction of pressure loss due to flow separation
at the convolutes"

Clearly, applicant cannot have it both ways, i.e. that the convoluted duct only has direct contact with the hot gases and also that a liner would shield the duct from direct contact.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information


Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 571-273-8300 for Regular faxes and 571-273-8300 for After Final faxes.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached at 571-272-4444.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at <http://www.uspto.gov/main/patents.htm>



Ted Kim	Telephone	571-272-4829
Primary Examiner	Fax (Regular)	571-273-8300
January 20, 2006	Fax (After Final)	571-273-8300
Technology Center 3700 Receptionist	Telephone	703-308-0861
Patents Assistance Center	Telephone	800-786-9199